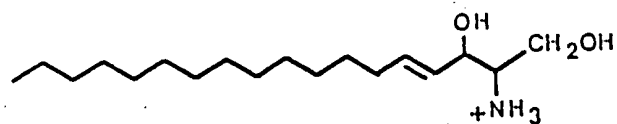


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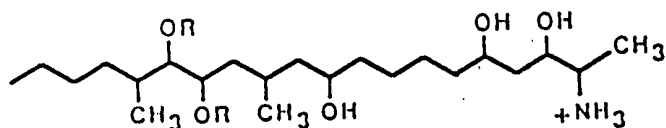


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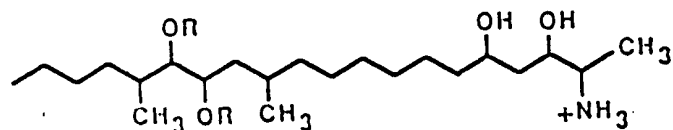
Figure 1



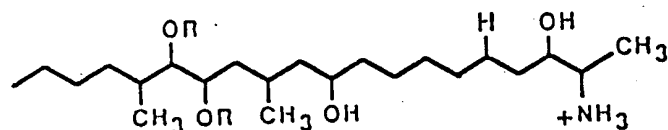
Sphingosine



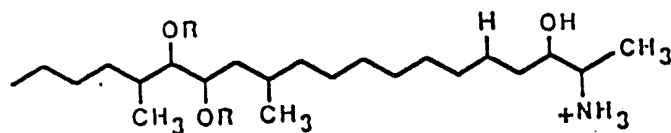
Fumonisin B<sub>1</sub>



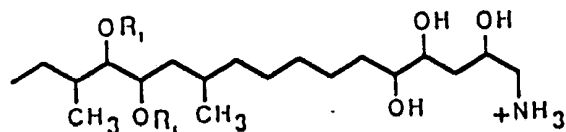
Fumonisin B<sub>2</sub>



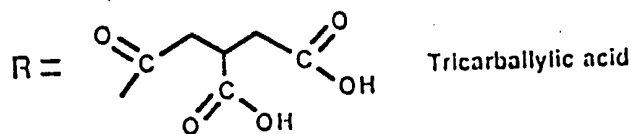
Fumonisin B<sub>3</sub>



Fumonisin B<sub>4</sub>



Alternaria toxins  
(AAL toxins)  
R<sub>1</sub> = H or R



Tricarballic acid



Fumonisin Analogs

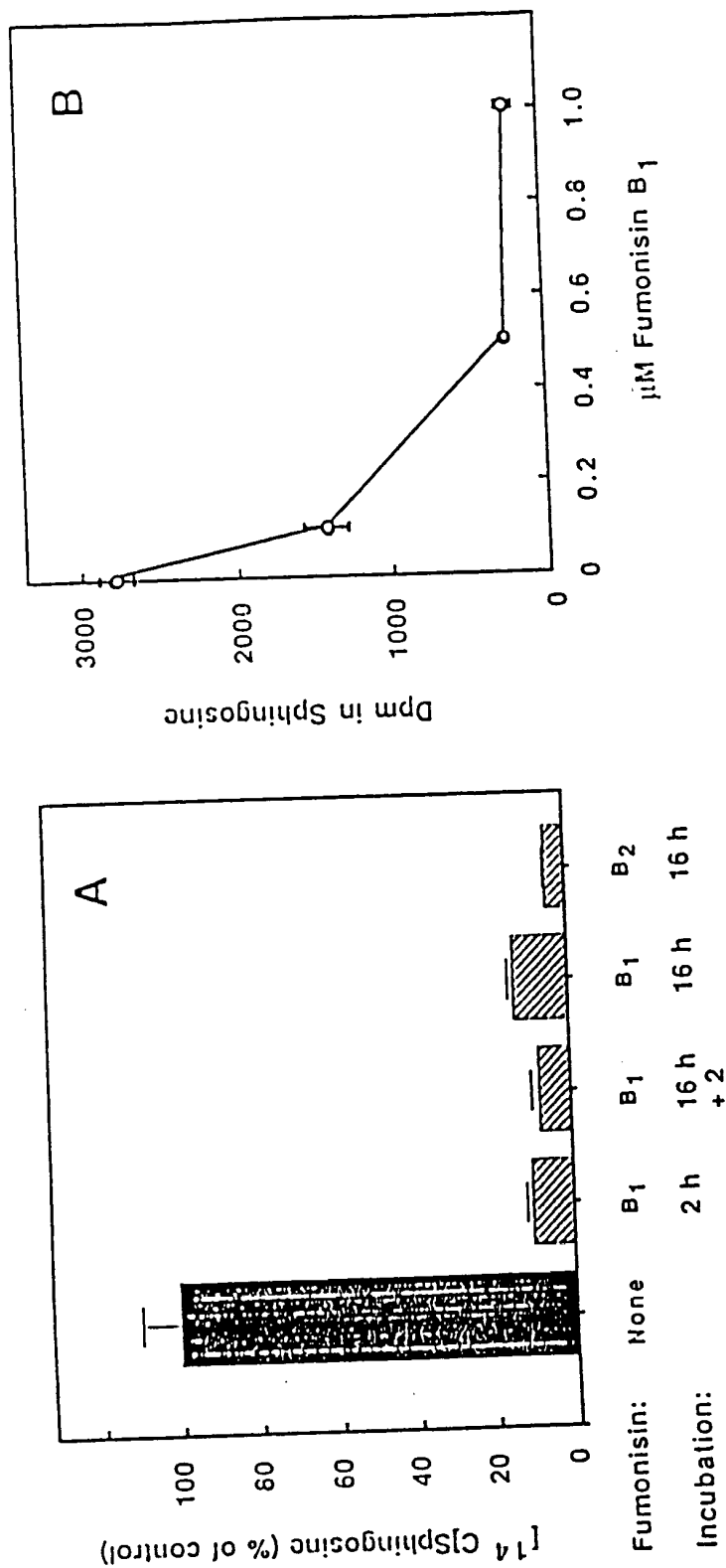


Figure 3

Figure 4

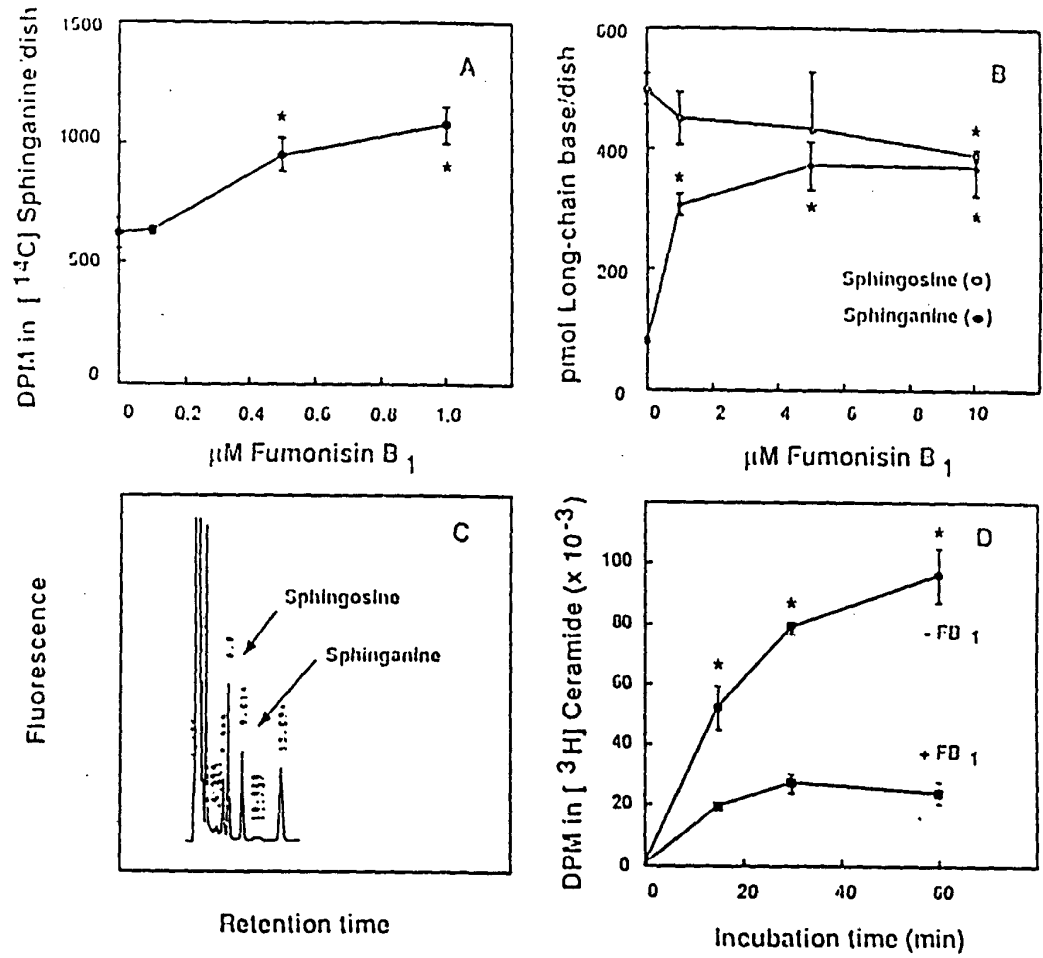
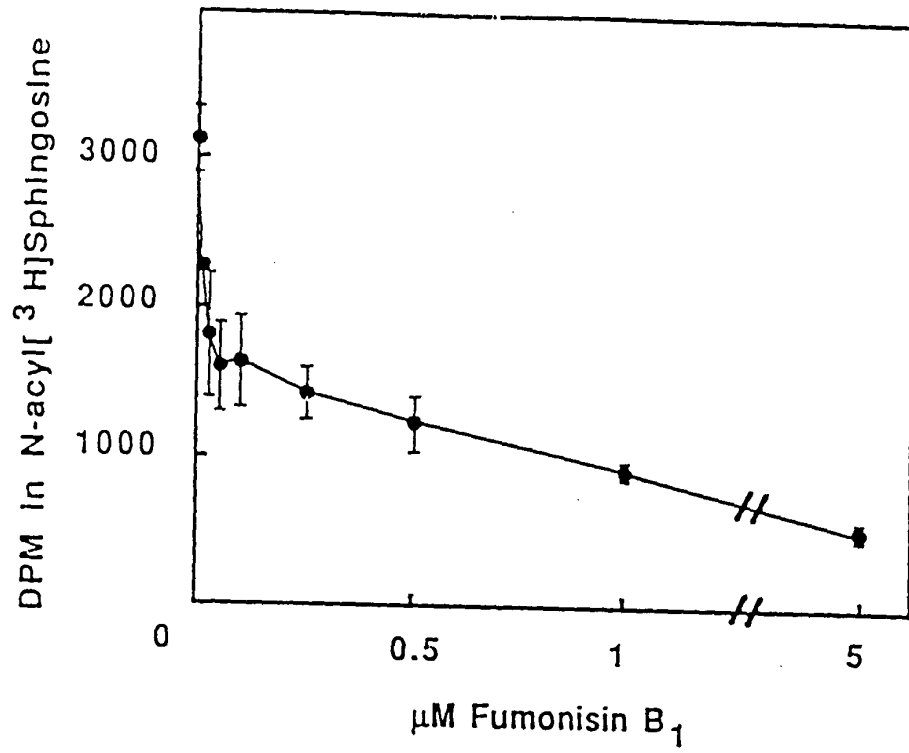


Figure 5



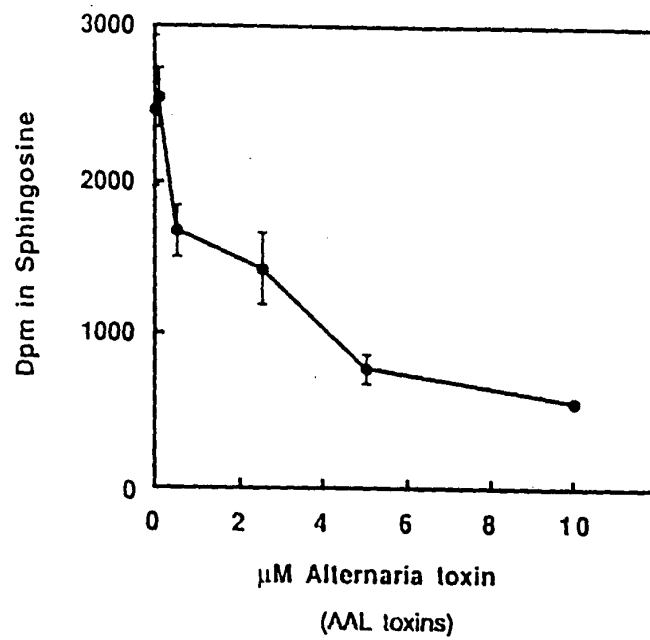


Figure 6

Figure 1 consists of four vertically stacked line graphs sharing a common x-axis representing 'Day' from 0 to 100. The top graph shows AST/SGOT levels, which peak sharply at day 10 (approx. 3000) and then fluctuate between 500 and 1000, with a final spike at day 95 (approx. 2300). The second graph shows the Sphinganine/Sphingosine Ratio, which peaks at day 10 (approx. 2.5), drops to a minimum around day 25 (approx. 0.8), and then fluctuates between 1.5 and 3.2. The third graph shows Sphingosine (pmol/ml), which peaks at day 10 (approx. 380) and then fluctuates between 80 and 150. The bottom graph shows Sphinganine (pmol/ml), which peaks at day 10 (approx. 680) and then fluctuates between 20 and 150. All graphs show a general trend of decreasing levels after the initial peak at day 10, with some fluctuations.

[illegible]

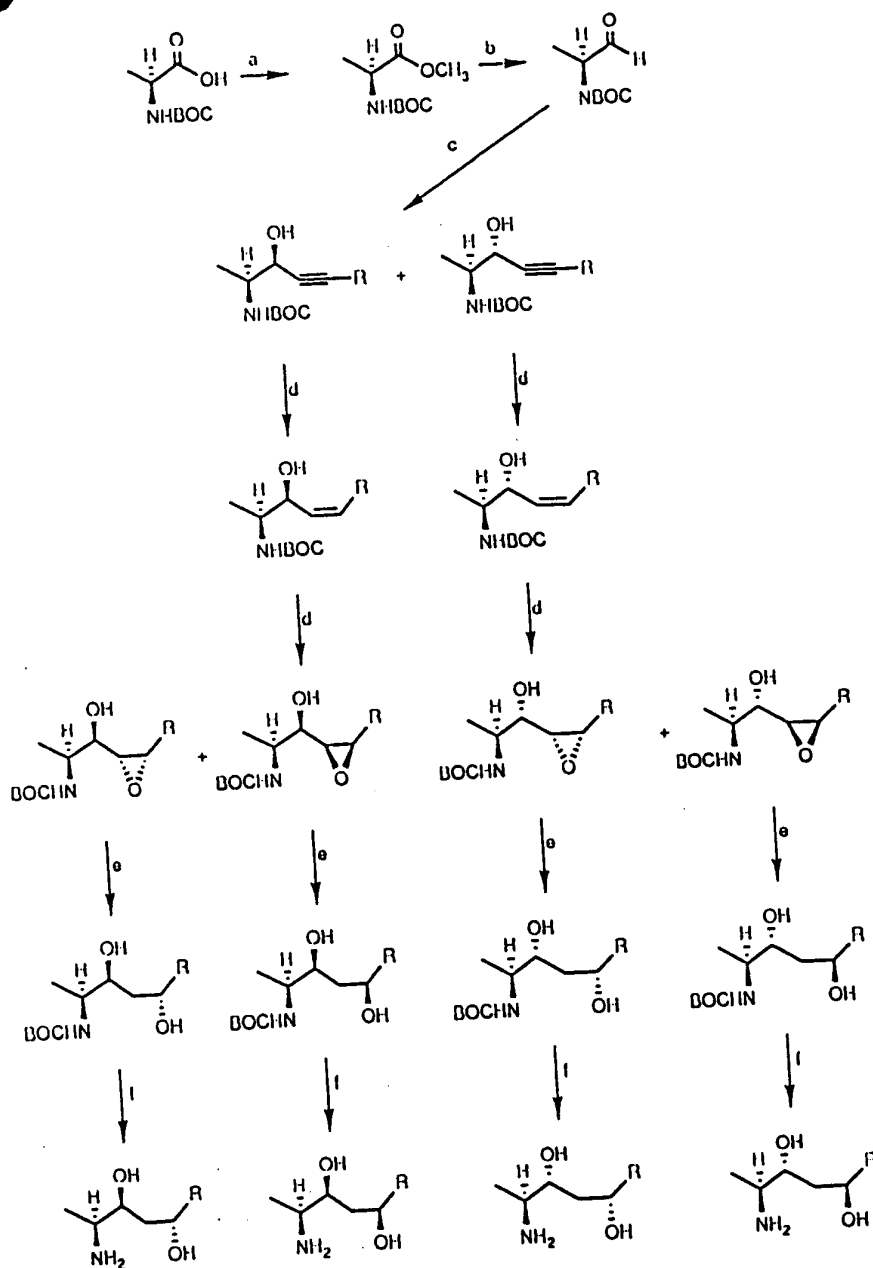
Figure 1 consists of three vertically stacked line graphs sharing a common x-axis labeled "Day of Experiment" ranging from 0 to 250. A shaded bar at the top indicates the concentration of a substance, with "15 ppm" from day 0 to 150 and "22 ppm" from day 150 to 230. An "X" is placed at the end of the 22 ppm period at day 230.

- Top Graph:** The y-axis is labeled "AST/SGOT" and ranges from 0 to 2000. The data shows a relatively stable level around 300 until day 150, followed by a sharp increase to a peak of approximately 2100 at day 230, then a decline to about 1100 by day 240.
- Middle Graph:** The y-axis is labeled "Spinganine:Spingosine Ratio" and ranges from 0.0 to 1.5. The ratio fluctuates between 0.1 and 0.5 until day 150, then rises sharply to a peak of approximately 1.8 at day 230, before declining to about 1.3 by day 240.
- Bottom Graph:** The y-axis is labeled "Spinganine" and ranges from 0.1 to 1.0. The levels fluctuate between 0.1 and 0.5 until day 150, then rise sharply to a peak of approximately 1.2 at day 230, before declining to about 1.0 by day 240.

**Figure 8**



CC(C)C(=O)OC + NH2.HCl  $\xrightarrow[\text{DMF}]{\text{Et}_3\text{N}/(\text{BOC})_2\text{O}}$  CC(C)C(=O)OC  
 1 2  
CC(C)C(=O)OC  $\xrightarrow[\text{DMF}]{\text{DIBAL-H}}$  CC(C)C=O  
 2 3  
CC(C)C=O  $\xrightarrow[\text{Benzene}]{\text{Ph}_3\text{PCHCHO}}$  CC(C)C=CC=O  
 3 4  
CC(C)C=CC=O  $\xrightarrow[\text{Et}_2\text{O}]{\text{MgBrC}_{13}\text{H}_{27}}$  CC(C)C=CC(O)C\_{13}H\_{27}  
 4 5  
CC(C)C=CC(O)C\_{13}H\_{27}  $\xrightarrow[\text{CH}_2\text{Cl}_2]{\text{mCPBA}/\text{NaHCO}_3}$  CC(C)C1C(O)CC(O)C1C\_{13}H\_{27}  
 5a 6  
CC(C)C1C(O)CC(O)C1C\_{13}H\_{27}  $\xrightarrow[\text{THF}]{\text{Red-Al}}$  CC(C)C(O)CC(O)C\_{13}H\_{27}  
 6a 7  
CC(C)C(O)CC(O)C\_{13}H\_{27}  $\xrightarrow{\text{HCl}/\text{EtOAc}}$  CC(C)C(O)CC(O)C\_{13}H\_{27}  
 7 8

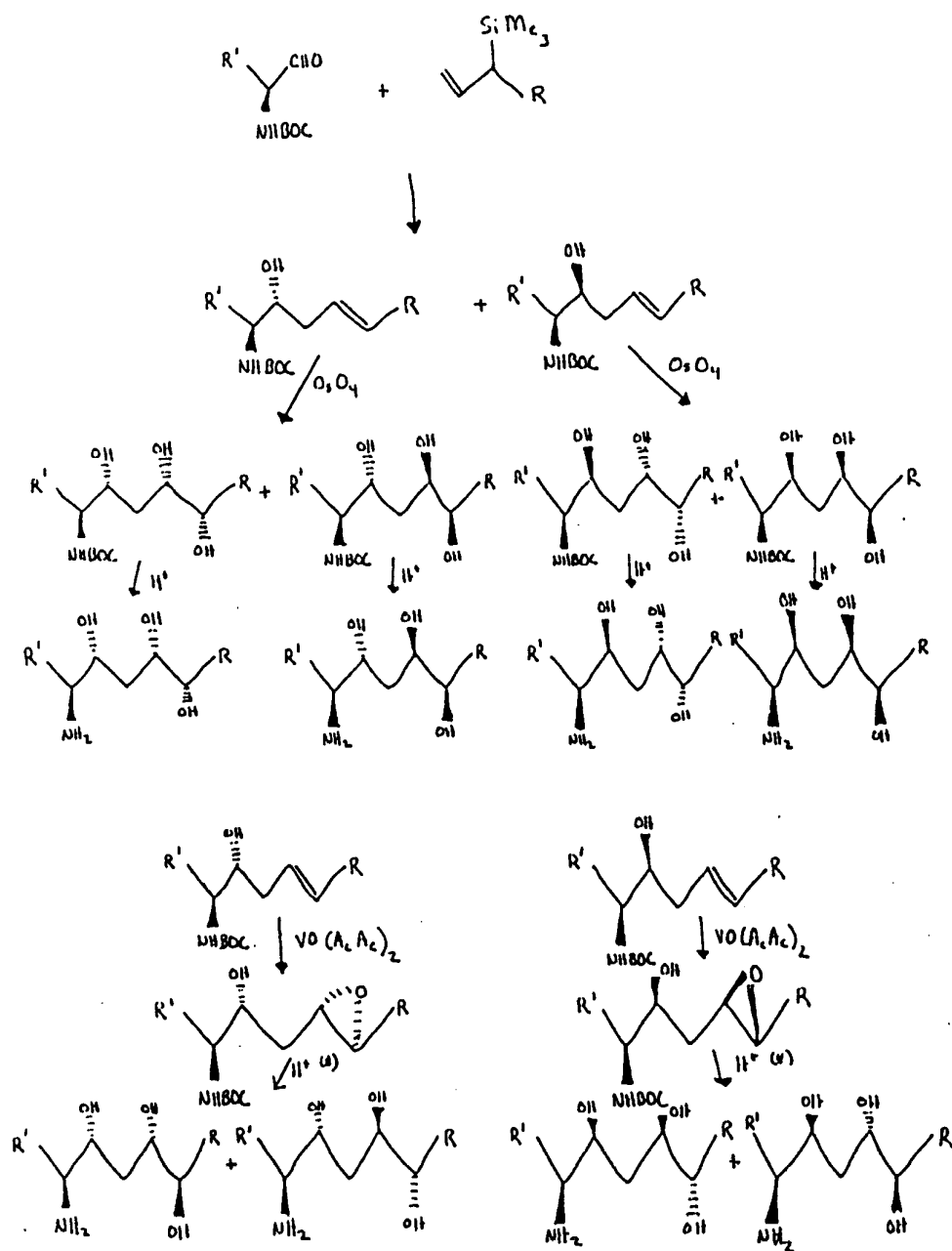


a.  $\text{CH}_2\text{N}_2$ ; b. DIBAL; c.  $\text{LiCCR}$ ; d. Peracid; e.  $\text{NaBH}_3\text{CN}$ ; f.  $\text{H}^+$

R = alkyl (straight chain or branched,  $\text{C}_8 - \text{C}_{20}$ ), hydroxy alkyl, amino alkyl, alkylcarboxy (same definition of alkyl), aryl, esters of the hydroxyalkyl and alkylcarboxy groups, amides of the aminoalkyl and alkylcarboxy groups.

Figure 10

Figure 11



$R$  = alkyl (straight chain or branched,  $C_8-C_{20}$ ), hydroxy alkyl, amino alkyl, alkylcarboxy (same definition of alkyl), aryl, esters of hydroxyalkyl and alkylcarboxy groups, amides of the aminoalkyl and alkylcarboxy groups

$R'$  = H,  $CH_3$ ,  $C_2H_5$ ,  $CH_2O$ -Protecting Group

(\*) Epoxide opening and removal of the BOC group may be more efficiently achieved using two discrete hydrolysis steps